

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the subject application:

1. (Currently Amended) A method for forming a wiring comprising the steps of:
performing a liquid-repellent treatment on a surface of an insulating film having an opening portion formed by dropping a dot including etchant;
performing selectively a lyophilic treatment on a region—the opening portion and a peripheral region of the opening portion of the surface of the insulating film to form a lyophilic region and a liquid-repellent region; and
forming [[a]]the wiring on the lyophilic region by dropping a composition including a conductive material.
2. (Currently Amended) A method for forming a wiring comprising the steps of:
forming a liquid-repellent region on a surface of an insulating film having an opening portion formed by dropping a dot including etchant;
forming selectively a lyophilic region in the liquid-repellent region so that the surface of the insulating film includes the liquid-repellent region and the lyophilic region in the opening portion and a peripheral region of the opening portion and the liquid repellent region; and
forming the wiring on the lyophilic region by dropping a composition including a conductive material.
3. (Currently Amended) A method for forming a wiring comprising the steps of:
forming a liquid-repellent region by a plasma treatment on a surface of an insulating film having an opening portion formed by dropping a dot including etchant by a plasma treatment;
forming selectively a lyophilic region in the liquid-repellent region so that the surface of the insulating film includes the liquid-repellent region and the lyophilic region in the opening portion and a peripheral region of the opening portion and the liquid repellent region; and
forming the wiring on the lyophilic region by dropping a composition including a conductive material.

4. (Original) The method for forming a wiring according to Claim 3, wherein the plasma treatment is performed at a pressure of 100 Torr to 1000 Torr.

5. (Previously Presented) The method for forming a wiring according to Claim 3, wherein the plasma treatment is performed under an atmospheric pressure or a pressure in a neighborhood of an atmospheric pressure by using air, oxygen or nitrogen as a treatment gas.

6. (Previously Presented) The method for forming a wiring according to Claim 2 or 3, wherein the lyophilic region is selectively formed by irradiating the liquid-repellent region with laser light.

7. (Previously Presented) The method for forming a wiring according to Claim 2 or 3, wherein a region that is less liquid-repellent than the liquid-repellent region is formed as the lyophilic region.

8. (Original) The method for forming a wiring according to any one of Claims 1 to 3, wherein the composition is dropped by an ink-jetting method.

9. (Currently Amended) A method for forming a wiring comprising the steps of:
forming a liquid-repellent region by forming a film containing fluorine on a surface of an insulating film having an opening portion formed by dropping a dot including etchant;
forming selectively a lyophilic region in the liquid-repellent region so that the surface of the insulating film includes the liquid-repellent region and the lyophilic region in the opening portion and a peripheral region of the opening portion and the liquid repellent region; and
forming the wiring on the lyophilic region by dropping a composition including a conductive material.

10. (Original) The method for forming a wiring according to Claim 9, wherein a Teflon film or a silane coupling agent is formed to form the liquid-repellent region.

11. (Previously Presented) The method for forming a wiring according to Claim 9,

wherein the lyophilic region is selectively formed by irradiating the liquid-repellent region with laser light.

12. (Previously Presented) The method for forming a wiring according to Claim 9, wherein a region that is less liquid-repellent than the liquid-repellent region is formed as the lyophilic region.

13. (Previously Presented) The method for forming a wiring according to Claim 9, wherein the composition is dropped by an ink-jetting method.

14. (Currently Amended) A method for manufacturing a thin film transistor comprising the steps of:

performing a liquid-repellent treatment on a surface of an insulating film having an opening portion formed by dropping a dot including etchant to form a first liquid-repellent region;

performing selectively a lyophilic treatment on a region of the surface of the insulating film to form a first lyophilic region so that the surface includes the first liquid-repellent region and the first lyophilic region in the opening portion and a peripheral region of the opening portion and the first liquid repellent region; and

forming a conductive film on the first lyophilic region by dropping a composition including a conductive material.

15. (Currently Amended) A method for manufacturing a thin film transistor comprising the steps of:

forming a first liquid-repellent region on a surface of an insulating film having an opening portion formed by dropping a dot including etchant;

forming selectively a first lyophilic region in the first liquid-repellent region so that the surface includes the first liquid-repellent region and the first lyophilic region in the opening portion and a peripheral region of the opening portion and the first liquid repellent region; and

forming a conductive film on the first lyophilic region by dropping a composition including a conductive material.

16. (Previously Presented) A method for manufacturing a thin film transistor comprising the steps of:

forming a first liquid-repellent region by a plasma treatment on a surface for forming a gate electrode;

forming selectively a first lyophilic region in the first liquid-repellent region;

forming the gate electrode in the first lyophilic region by dropping a composition including a conductive material;

forming a second liquid-repellent region by a plasma treatment on a surface for forming a source electrode and a drain electrode;

forming selectively a second lyophilic region in the second liquid-repellent region; and

forming the source electrode and the drain electrode in the second lyophilic region by dropping a composition including a conductive material.

17. (Previously Presented) A method for manufacturing a thin film transistor comprising the steps of:

forming a first liquid-repellent region by a plasma treatment on a substrate;

forming selectively a first lyophilic region in the first liquid-repellent region;

forming a gate electrode in the first lyophilic region of the substrate by dropping a composition including a conductive material;

forming a gate insulating film to cover the gate electrode;

forming a semiconductor film over the gate electrode;

forming a semiconductor film having one conductivity over the semiconductor film;

forming a second liquid-repellent region by a plasma treatment on the semiconductor film having one conductivity and the gate insulating film;

forming selectively a second lyophilic region in the second liquid-repellent region; and

forming a source electrode and a drain electrode in the second lyophilic region of the semiconductor film having one conductivity and the gate insulating film by dropping a composition including a conductive material.

18. (Previously Presented) A method for manufacturing a thin film transistor, comprising the steps of:

forming a source electrode and a drain electrode;
forming a semiconductor film over the source electrode and the drain electrode;
forming a first liquid-repellent region by a plasma treatment on a surface for forming a gate electrode in an upper portion of the semiconductor film;
forming selectively a first lyophilic region in the first liquid-repellent region; and
forming the gate electrode in the first lyophilic region of the surface of the semiconductor film by dropping a composition including a conductive material.

19. (Previously Presented) A method for manufacturing a thin film transistor, comprising the steps of:

forming a source electrode and a drain electrode over a base film;
forming a semiconductor film over the source electrode and the drain electrode;
forming a first liquid-repellent region by a plasma treatment on the semiconductor film;
forming selectively a first lyophilic region in the first liquid-repellent region;
forming a mask in the first lyophilic region of the semiconductor film by dropping a composition including a material of the mask;
 patterning the semiconductor film by using the mask;
forming a gate insulating film to cover the semiconductor film;
forming a second liquid-repellent region by a plasma treatment on the gate insulating film;
forming selectively a second lyophilic region in the second liquid-repellent region; and
forming a gate electrode in the second lyophilic region of the gate insulating film by dropping a composition including a conductive material.

20. (Previously Presented) A method for manufacturing a thin film transistor comprising the steps of:

forming a first liquid-repellent region by a plasma treatment on a base film;
forming selectively a first lyophilic region in the first liquid-repellent region;
forming a source electrode and a drain electrode in the first lyophilic region of the base film by dropping a composition including a conductive material;
forming a semiconductor film over the source electrode and the drain electrode;

forming a second liquid-repellent region by a plasma treatment on the semiconductor film;

forming selectively a second lyophilic region in the second liquid-repellent region;

forming a mask in the second lyophilic region of the semiconductor film by dropping a composition including a material of the mask;

patterning the semiconductor film by using the mask;

forming a gate insulating film to cover the semiconductor film;

forming a third liquid-repellent region by a plasma treatment on the gate insulating film;

forming selectively a third lyophilic region in the third liquid-repellent region; and

forming a gate electrode in the third lyophilic region of the gate insulating film by dropping a composition including a conductive material.

21. (Previously Presented) The method for manufacturing a thin film transistor according to Claim 14 or 15, wherein the first liquid-repellent region is formed by forming a CF₂ bond on the surface by a plasma treatment.

22. (Currently Amended) The method for manufacturing a thin film transistor according to any one of Claims 14, 15, and 18, Claim 14 or 15, further comprising the steps of:

forming an interlayer insulating film;

forming an opening portion in the interlayer insulating film;

forming a second liquid-repellent region in a surface of the opening portion and the interlayer insulating film by a plasma treatment on the interlayer insulating film in which the opening portion is formed;

forming selectively a second lyophilic region in the opening portion of the second liquid-repellent region; and

forming a wiring to be connected to a source electrode or a drain electrode through the opening portion by dropping a composition including a conductive material.

23. (Previously Presented) The method for manufacturing a thin film transistor according to any one of Claims 14, 15, and 18, wherein the first liquid-repellent region is irradiated with laser light to selectively form the first lyophilic region.

24. (Previously Presented) The method for manufacturing a thin film transistor according to any one of Claims 14 to 20, wherein the composition is dropped by an ink-jetting method.

25. (Currently Amended) A method for manufacturing a thin film transistor, comprising the steps of:

forming a film containing fluorine;

forming selectively a first lyophilic region in the film containing fluorine so that the film containing fluorine includes the first lyophilic region and a first liquid-repellent region;

forming a gate electrode on the first lyophilic region by dropping a composition including a conductive material; [[and]]

performing a heat treatment for baking the gate electrode, and removing the film containing fluorine by the heat treatment;

forming an interlayer insulating film;

forming an opening portion in the interlayer insulating film;

forming a second liquid-repellent region in a surface of the opening portion and the interlayer insulating film by a plasma treatment on the interlayer insulating film in which the opening portion is formed;

forming selectively a second lyophilic region in the opening portion of the second liquid-repellent region; and

forming a wiring to be connected to a source electrode or a drain electrode through the opening portion by dropping a composition including a material of the wiring.

26. (Previously Presented) A method for manufacturing a thin film transistor comprising the steps of:

forming a first film containing fluorine;

forming selectively a first lyophilic region in the first film containing fluorine;

forming a gate electrode in the first lyophilic region by dropping a composition including a conductive material;

performing a first heat treatment to bake the gate electrode, and removing the first film containing fluorine by the first heat treatment;

forming a gate insulating film to cover the gate electrode;

forming a semiconductor film over the gate electrode;

forming a semiconductor film having one conductivity over the semiconductor film;

forming a second film containing fluorine over the semiconductor film having one conductivity and the gate insulating film;

forming selectively a second lyophilic region in the second film containing fluorine;

forming a source electrode and a drain electrode in the second lyophilic region of the semiconductor film having one conductivity and the gate insulating film by dropping a composition including a conductive material; and

performing a second heat treatment to bake the source electrode and the drain electrode, and removing the second film containing fluorine by the second heat treatment.

27. (Previously Presented) The method for manufacturing a thin film transistor according to Claim 25, wherein a film including a Teflon or a silane coupling agent is formed as the film containing fluorine.

28. (Canceled)

29. (Previously Presented) The method for manufacturing a thin film transistor according to Claim 25, wherein the film containing fluorine is irradiated with laser light to selectively form the first lyophilic region.

30. (Previously Presented) The method for manufacturing a thin film transistor according to Claim 25 or 26, wherein the composition is dropped by an ink-jetting method.

31. (Previously Presented) A droplet discharging method, comprising the steps of:

forming a lyophilic region by irradiating selectively an object to be treated in which a liquid-repellent region is formed with light by a light irradiation unit so that the object to be treated includes the lyophilic region and the liquid-repellent region; and

discharging a droplet onto the lyophilic region by a droplet discharging unit, in a treatment chamber including the droplet discharging unit and the light irradiation unit.

32. (Currently Amended) A droplet discharging method, using a treatment apparatus in which a first treatment chamber having a plasma unit and a dielectric, and a second treatment chamber having a droplet discharging unit and a light irradiation unit, comprising the steps of:

forming a liquid-repellent region in an object to be treated by the plasma unit and the dielectric in the first treatment chamber;

transporting the object to be treated into the second treatment chamber without being exposed to the atmosphere;

forming selectively a lyophilic region in the object to be treated in which [[a]]the liquid-repellent region is formed by the light irradiation unit in the second treatment chamber so that the object to be treated includes the lyophilic region and the liquid-repellent region; and

discharging a droplet onto the lyophilic region by the droplet discharging unit.

33. (Original) The droplet discharging method according to Claim 31 or 32, wherein the droplet discharging unit and the light irradiation unit are integrally formed.

34. (Previously Presented) The droplet discharging method according to Claim 31 or 32, wherein the light irradiation unit includes laser light.

35. (Previously Presented) The droplet discharging method according to Claim 31 or 32, wherein the droplet is dropped by an ink-jetting method.

36. (Previously Presented) The method for manufacturing a thin film transistor according to Claim 16, wherein each of the first liquid-repellent region and the second liquid-repellent region is formed by forming a CF₂ bond on the surface for forming a gate electrode and the surface for forming a source electrode and a drain electrode by the plasma treatment.

37. (Previously Presented) The method for manufacturing a thin film transistor according to Claim 17, wherein each of the first liquid-repellent region and the second liquid-repellent region is formed by forming a CF₂ bond on the substrate and on the semiconductor film by the plasma treatment.

38. (Previously Presented) The method for manufacturing a thin film transistor according to Claim 18, wherein the first liquid-repellent region is formed by forming a CF₂ bond on the surface by the plasma treatment.

39. (Previously Presented) The method for manufacturing a thin film transistor according to Claim 19, wherein each of the first liquid-repellent region and the second liquid-repellent region is formed by forming a CF₂ bond on the semiconductor film and on the gate insulating film by the plasma treatment.

40. (Previously Presented) The method for manufacturing a thin film transistor according to Claim 20, wherein each of the first liquid-repellent region, the second liquid-repellent region, and the third liquid-repellent region is formed by forming a CF₂ bond on the base film and on the semiconductor film by the plasma treatment.

41. (Previously Presented) The method for manufacturing a thin film transistor according to any one of Claims 16, 17, and 19, further comprising the steps of:

forming an interlayer insulating film;

forming an opening portion in the interlayer insulating film;

forming a third liquid-repellent region in a surface of the opening portion and the interlayer insulating film by a plasma treatment on the interlayer insulating film in which the opening portion is formed;

forming selectively a lyophilic region in the opening portion of the third liquid-repellent region; and

forming a wiring to be connected to the source electrode or the drain electrode through the opening portion by dropping a composition including a conductive material.

42. (Previously Presented) The method for manufacturing a thin film transistor according to Claim 20, further comprising the steps of:

forming an interlayer insulating film;

forming an opening portion in the interlayer insulating film;

forming a fourth liquid-repellent region in a surface of the opening portion and the

interlayer insulating film by a plasma treatment on the interlayer insulating film in which the opening portion is formed;

forming selectively a lyophilic region in the opening portion of the fourth liquid-repellent region; and

forming a wiring to be connected to the source electrode or the drain electrode through the opening portion by dropping a composition including a conductive material.

43. (Previously Presented) The method for manufacturing a thin film transistor according to any one of Claims 16, 17, and 19, wherein each of the first liquid-repellent region and the second liquid-repellent region is irradiated with laser light to selectively form the first lyophilic region and the second lyophilic region.

44. (Previously Presented) The method for manufacturing a thin film transistor according to Claim 20, wherein each of the first liquid-repellent region, the second liquid-repellent region, and the third liquid-repellent region is irradiated with laser light to selectively form the first lyophilic region, the second lyophilic region, and the third lyophilic region.

45. (Previously Presented) The method for manufacturing a thin film transistor according to Claim 26, wherein a film including a Teflon or a silane coupling agent is formed as the first film containing fluorine and the second film containing fluorine.

46. (Previously Presented) The method for manufacturing a thin film transistor according to Claim 26, further comprising the steps of:

forming an interlayer insulating film;

forming an opening portion in the interlayer insulating film;

forming a liquid-repellent region in a surface of the opening portion and the interlayer insulating film by a plasma treatment on the interlayer insulating film in which the opening portion is formed;

forming selectively a lyophilic region in the opening portion of the liquid-repellent region; and

forming a wiring to be connected to the source electrode or the drain electrode through

the opening portion by dropping a composition including a material of the wiring.

47. (Previously Presented) The method for manufacturing a thin film transistor according to Claim 26, wherein each of the first film containing fluorine and the second film containing fluorine is irradiated with laser light to selectively form the first lyophilic region and the second lyophilic region.